

509,272

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



Rec'd PCT/PTO 27 SEP 2004



(43) International Publication Date
9 October 2003 (09.10.2003)

PCT

(10) International Publication Number
WO 03/083255 A1

(51) International Patent Classification⁷: **E21B 33/134,**
33/12

[GB/GB]; 102 Hob Hey Lane, Culcheth, Cheshire WA3 4NW (GB).

(21) International Application Number: PCT/GB03/01293

(74) Agent: **ALLMAN, Peter, John**; Marks & Clerk, Sussex House, 83-85 Mosley Street, Manchester M2 3LG (GB).

(22) International Filing Date: 26 March 2003 (26.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0207371.6 28 March 2002 (28.03.2002) GB

(71) Applicant (for all designated States except US):
RAWWATER ENGINEERING COMPANY LIMITED [GB/GB]; Rawwater House, 102 Hob Hey Lane, Culcheth, Cheshire WA3 4NW (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

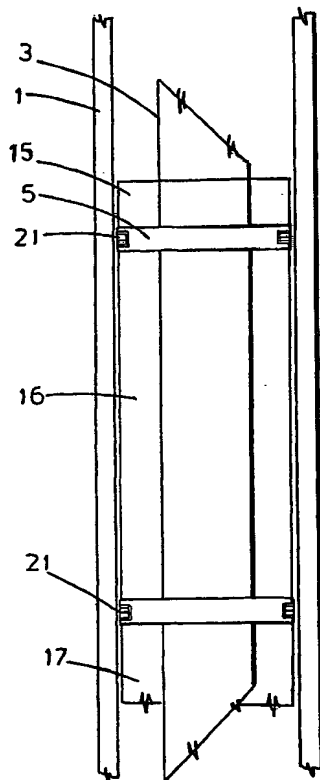
(72) Inventor; and

(75) Inventor/Applicant (for US only): **EDEN, Robert, David**

[Continued on next page]

(54) Title: SEALING METHOD AND APPARATUS

(57) Abstract: A method and apparatus for forming a plug in a passageway. The apparatus comprises a carrier which in use is lowered into the passageway, the carrier comprising an elongate body (3) of a material resistant to creep which supports at least two spaced apart portions (5) that are a sliding fit in the well (1) such that a gap is formed between each of the portions and the passageway. A body of material (15, 16, 17) the melting point of which is higher than the temperature within the passageway and which expands as it solidifies is supported on the carrier. A heating device is provided for melting the body of material such that the melted material fills a space defined between the first and second portions. The carrier is cooled preferentially to ensure that the molten material solidifies rapidly adjacent the two spaced apart portions, thereby resisting flow of the material as it solidifies past the spaced apart portions. Means (21) are provided to obstruct the gaps formed between the portions and the passageway; the obstructing means being displaced into the gaps as a result of melting of the body of material or as a result of any creep of material after it has been melted and solidified.



WO 03/083255 A1

WO 03/083255 A1



SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB 03/01293

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E21B33/134 E21B33/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2 191 783 A (WELLS WALTER T) 27 February 1940 (1940-02-27) page 1, right-hand column, line 6 - line 19	19-22
A	column 2, line 14 - line 37; figures 1-4	1
Y	US 2 298 129 A (IRONS CARROLL R) 6 October 1942 (1942-10-06)	19-22
A	page 2, right-hand column, line 39 - line 54	1
A	US 2 942 668 A (MALY GEORGE P ET AL) 28 June 1960 (1960-06-28) page 3, line 6 - page 3, line 22; figure 4	1, 19
A	US 2 363 269 A (MARCEL SCHLUMBERGER) 21 November 1944 (1944-11-21) the whole document	1, 19

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *Z* document member of the same patent family

Date of the actual completion of the international search

24 June 2003

Date of mailing of the international search report

04/07/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer:

Bellingacci, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/01293

Information on patent family members

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2191783	A	27-02-1940	NONE	
US 2298129	A	06-10-1942	NONE	
US 2942668	A	28-06-1960	NONE	
US 2363269	A	21-11-1944	NONE	